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### (54) COMPLETENESS TESTING METHOD

(57) Abstract:

**PURPOSE:** To detect a defect of the structural parts of a filter and a filter cartridge at high precision by measuring diffusion flow rate of pressure holding value at the pressure of at least two points in a range of  $\leq$  90% value of a bubble point of the filter.

**CONSTITUTION:** Liquid such as water which is low in solubility of gap and small in diffusion coefficient and high in surface tension  $\delta$  is utilized for test liquid. The contact angle of test liquid and a membrane is regulated to  $\theta$ . The relation of radius ( $r$ ) of a defect of a filter or a cartridge and the spray pressure  $P$  of test liquid is shown in  $r=2\delta\cos\theta/P$ . Spray amount  $QL$ (ml/min) is obtained by an expression  $QL=15\pi d^4 P/32L\eta$  in the case of (d) ( $\mu\text{m}$ ) diameter of a defect,  $P$  (bar) differential pressure,  $L$ (m) length of the defect and  $\eta$  ( $\mu\text{poise}$ ) viscosity

of spray fluid. Accordingly, completeness can be tested at the pressures for two or more points of  $\leq$  90% value of bubble, with the diffusion flow rate or pressure holding value and differential values between measurement points as an inspection standard point.

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